

# THE FY 2005 IMPLEMENTATION PLAN FOR NWS TRAINING AND EDUCATION

## I. OVERVIEW

Training and education activities for the National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service (NWS) staff in fiscal year (FY) 2005 is specified by this document. The requirement for the FY 2005 Implementation Plan for NWS Training and Education (IP05) is the end result of the National Strategic Training and Education Plan (NSTEP) process.

The NSTEP process determines and prioritizes training requirements within available discretionary budgets and is coordinated by the NSTEP Field Requirements Group (FRG). For the IP05 process, the FRG representatives included Regional Scientific Services Division Chiefs or Regional Scientists, and the Executive Officer for the National Centers for Environmental Prediction (NCEP). Members of the FRG and other experts participated in conference calls during spring 2004 to identify the highest priority NWS training to be accomplished in FY 2005. Tables 1, 2, and 3 show the FY 2005 final in-residence classes and training expenditures.

This document provides the NSTEP Heads of Training Group (HOTG) the requirements for the training they are to offer and the instructional modules they are to develop for FY 2005. Coordination of the entire NSTEP process, including development of this plan, was facilitated by the Office of Climate, Water, and Weather Services (OCWWS) Training Division. Additional information on NSTEP may be accessed at:

<http://www.nws.noaa.gov/om/os/org/training/nstep.pdf>

The remainder of the document is structured as follows. A section on how training meets NWS and NOAA performance goals is described in Section II and provided in Attachment 1. FY 2005 contingencies and challenges due to budget, and due to the potential of an A-76 study at the NWS Training Center (NWSTC) are described in Section III. Information on an initiative to develop a NWS "Staff College" is detailed in Section IV. A summary of definitions and terms used in conjunction with the Professional Development Series (PDS) process is provided in Section V. A detailed summary of training plans for FY 2005 is provided in Section VI. These plans include Professional

Development Series (PDS)-related residence courses and distance-learning development, in addition to other programmatic training activities for which funds have been identified. Information on the NWS Learning Management System is provided in Section VII. Section VIII provides a summary of FY 2005 International training activities to be coordinated by the NWS Office of International Affairs. Finally, Section IX contains information on "defunded" and unfunded FY 2005 training requirements.

There are several attachments to this document. Table 1 contains a summary of all in-residence classes to be offered in FY 2005. This summary provides details related to class size and length, funding source, slot allocation by Region, and itemized costs (including contract and supply costs for all classes). Table 2 contains the complete listing of activities associated with the discretionary portion of the training budget as prioritized by the FRG. In both Tables 1 and 2, new items in FY 2005 are highlighted in yellow. Table 3 contains the non-discretionary portion of the training budget, including labor, telecommunications, and other necessary operating charges. It is important to note the labor costs of the government Full-Time Employees (FTEs) in the OCWWS Training Division are not listed, nor are the non-classroom support provided by the Automated Surface Observing System (ASOS), Next Generation Weather Radar (NEXRAD), and Advanced Weather Interactive Processing System (AWIPS) programs to the NWSTC and the Warning Decision Training Branch (WDTB).

Attachment 1 provides a description of and notes the intended audience for all FY 2005 residence courses. Finally, Attachment 2 provides information on how training links to NWS Government Performance and Results Act goals and performance measures.

## **II. GPRA, NWS, AND NOAA STRATEGIC GOALS**

The training the NWS provides to its staff enhances the knowledge, skills and abilities needed to support the NWS operational mission, and to meet NWS' and NOAA's Government Performance and Results Act (GPRA) Goals. In particular, a significant portion of NWS training activities are provided to help meet GPRA goals related to improving warning and forecast performance. Attachment 2 of this document provides specific linkages between NWS training and the aforementioned goals.

### **III. FY 2005 CONTINGENCIES AND CHALLENGES**

There are two continuing issues which will impact IP05. The first major issue is related to budget, while the second is due to the continued possibility for an A-76 study at the NWSTC.

#### **A. Budget Impacts**

The NWS training budget has remained level funded since 1996. This provides serious challenges in the efforts to meet training goals set forth by the NWS and NOAA.

Each year, the OCWWS Training Division receives an increasing number of existing and new training requirements from NSTEP stakeholders. For FY 2005, the total amount of NSTEP requirements totaled \$11,000,000. This is nearly three times the amount of funding available in the current discretionary portion of the NSTEP budget. As a result, many FY 2005 initiatives and existing training were either funded at reduced levels or not funded at all. Examples of items not funded include many Information Technology (IT) related items (e.g., Microsoft Office training, IT security training, hardware upgrade of the Weather Event Simulator), and the Senior Leadership Potential Program. Examples of items which were funded but absorbed cuts include Regional training funds used to fund regional and local office training (50 percent cut), and Integrated Forecast Preparation System training (75 percent cut).

In addition, the Financial Investment Review Committee (FIRC) of the NWS Corporate Board provided an additional \$1,300,000 to the NSTEP training budget in FY 2004. However, due to forecast budget shortfalls, it is not expected this funding will continue in FY 2005.

#### **B. A-76 Impacts**

In FY 2003, the NWSTC was identified for an outsourcing process as specified by Office of Management and Budget (OMB) Circular A-76. This process requires the functions of the organization under study to be migrated to a contract environment based on demonstrated efficiencies to the government.

During FY 2004, NOAA and NWS reclassified NWSTC on the 2004 Fair Act Inventory as "commercial but reserved from study". At the

time this document was written, the process to study the NWSTC is officially "on hold" until the inventory is approved by OMB. Final approval of the inventory is expected between September 2004 and February 2005.

If the NWSTC portion of the inventory is not approved, there will be significant impacts on IP05. The OCWWS Training Division will keep NSTEP Team members apprised of developments in the coming year and will be prepared to make needed adjustments to items funded in FY 2005.

#### **IV. NWS STAFF COLLEGE**

NOAA's NWS has a long history of providing excellent and timely training for its staff in support of mission. In recent years, a library of nationally-available training materials has been amalgamated on a centralized website, complete with required knowledge, skills, and abilities (KSAs) associated with various job functions. This is known as the Professional Development Series (PDS), which is described in Section V below.

As the pace of new technology and software deployment continues to accelerate, the range of needed job skills and the library of available training materials continues to grow. This, combined with the need to advocate for the importance of training via NOAA's Planning, Programming, Budgeting, and Execution System, demands a more rigorous infrastructure to support NWS training activities, and a revisiting of the original PDS structure and processes. This issue will be discussed with the NSTEP Team in FY 2005 for possible implementation in FY 2006.

The concept of a NWS Staff College is to structure learning materials and learning processes in a way which emulates the structure utilized in world class learning institutions. This includes establishment of clear, sequential curricula to support associated job-based KSAs, standardized curriculum and learning object development, and a rigorous evaluation system to measure the impact of training on job performance and customer service.

NWS plans to initiate Staff College development in FY 2005 by updating some of the KSA libraries and organizing them into sequential curricula. NWS will also establish a uniform training evaluation process to be used across all of its training offerings with the goal of providing improved

measurement of training effectiveness. NWS plans to share the results of its processes with other NOAA Line Offices with the goal of highlighting the benefits of creating their own Staff Colleges. An ultimate goal of this effort is to have these individual Staff Colleges leverage resources towards common goals to establish a NOAA University.

## **V. PROFESSIONAL DEVELOPMENT SERIES PROCESS - DEFINITIONS AND TERMS**

A Professional Development Series (PDS) is defined as "a set of integrated instructional components and presentations which describe the skills, knowledge, and abilities necessary to fulfill a major job responsibility." Each PDS is made up of a series of Professional Competency Units (PCUs) and Instructional Components (ICs), which are defined as follows:

Professional Competency Unit (PCU): Taken together, PCUs make up the integrated set of related job skills and abilities required to fulfill a major job responsibility (i.e., a PDS). Each PCU specifically defines the skills or abilities individual staff is expected to attain in a given area of job performance.

Instructional Component (IC): ICs are the specific training modalities used to train the job skills outlined in a specific PCU. A number of different training modalities are used to accomplish required training within each PDS and PCU. All PDS information is contained as part of the NWS Training Internet home page ("NWSTRN"). "NWSTRN" is a cross-cutting reference source for all NWS training activities. This page can be accessed at:

<http://www.nwstc.noaa.gov/nwstrn/>

"NWSTRN" is designed so staff in any NWS position can easily identify the suite of basic job skills they are expected to master.

A table is accessible via the "Professional Development Series" (PDS) hyperlink on NWSTRN, with hyperlinks provided for each PCU box to access specific PDS definitions and available training. Listed for each PDS in the aforementioned table is the associated number of PCUs, along with their developmental status. A green box with an "F" indicates all initial training

materials for the PCU have been developed and are available for use. These materials undergo periodic updating to ensure consistency with new science and technology. A yellow box with a "U" indicates training development for the PCU is under development but not yet complete. A red box with an "N" denotes training development has not yet started for the PCU. This information is dated in some instances, and the entire PDS structure will be reexamined during the development of the NWS Staff College, which is described previously in Section III.

PDSs are developed in the following areas:

- (A) Aviation Weather
- (B) Convective
- (C) Numerical Weather Prediction
- (D) Integrated Sensor Training
- (E) Forecaster Development Program
- (F) Management, Supervision, and Leadership
- (G) Hydrology
- (H) Advanced Weather Interactive Processing System
- (I) Engineering, Electronics, and Facilities
- (J) Cooperative Observer/Hydrometeorological Technician Duties
- (K) Marine Weather Services
- (L) Fire Weather
- (M) Climate Services
- (N) Administrative
- (O) Interactive Forecast Preparation System Training
- (P) Winter Weather

## **VI. TRAINING PLANS FOR FY 2005**

Detailed training plans for FY 2005 are presented for each PDS shown at the end of Section V (A through P), and other training activities funded are covered in subsections (Q) through (S).

### **A. Aviation Weather PDSs**

During FY 2005, the Cooperative Program for Operational Meteorology, Education and Training (COMET) will continue to support the Distance Learning Aviation Course 1 (DLAC1): "Forecasting Fog and Low Stratus". This course is entirely online, and COMET uses a progress tracking system so students can maintain a permanent record of the modules they have completed.

In addition, COMET will work on a second DLAC focusing on forecasting convective weather for aviation operations. Self-paced modules and teletraining will be developed, with a beta test scheduled for early FY 2006.

To accompany the two DLAC courses mentioned above, COMET and WDTB will collaborate to develop a Weather Event Simulator (WES) case on Ceiling and Visibility in conjunction with the OCWWS Aviation Services Branch.

Finally, NWSTC will deliver and support a new web-based "Aviation Operations Course" in early FY 2005. The course will focus on: 1) NWS aviation history, 2) who our customers are, 3) how weather impacts the aviation industry, 4) NWS aviation products and services, and 5) FAA structure and flow control. The goal of the training is to increase forecaster awareness of how his/her aviation products and services impact the aviation user community.

## B. Convective PDS

The goal of the Convective PDS is to elicit a better scientific understanding of the elements involved in the convective warning process which will improve skills in decision making and ultimately lead to better service. The following activities will be conducted in FY 2005:

### 1. *WES Releases*

WDTB will release new versions of the WES software to:

- Ensure it is operationally representative and
- Enhance effectiveness of this critical training tool.

### 2. *New Warning-Related Functionality*

WDTB will conduct distance-learning training on new WSR-88D and AWIPS warning-related functionality associated with new Build releases.

### 3. *Advanced Warning Operations Course (AWOC)*

AWOC will provide Warning Decision Making (WDM) principles to all NWS forecasters. In FY 2005, AWOC delivery will consist of a "core" track and a "severe weather" track. Topics for the core track include Situation Awareness, Decision Making, Office Strategies, Communication, Collaboration, Post-Event Assessment, Data Quality, Societal Impacts, and Public Perception. Topics

to be covered in the severe weather track include Severe Hazards Threat Assessment, Interrogation Procedures, and at least two Severe Weather Simulations (fulfills a requirement established in NWS Instruction 20-101).

The core track and severe weather track will each consist of 10 to 16 hours of material. A majority of the material will be delivered asynchronously (without direct contact to an instructor), such as web-based modules and recorded teletraining sessions. Some of the material will be delivered synchronously via teletraining, and offered a sufficient number of times (more than 70) to accommodate completion by all students.

A key component for the success of AWOC is on-site facilitation. Accordingly, a two day "AWOC Facilitator Workshop" for Development and Operations Hydrologists (DOHs) will be held in early FY 2005. This workshop, previously offered to all Science and Operations Officers (SOOs) during FY 2004, features presentations by both instructors and subject matter experts on course purpose, content, and administration. The completion of AWOC will be included in FY 2005 Office Training Plans for all forecasters with warning responsibility.

#### C. Numerical Weather Prediction PDS

NWS forecast staff requires a working knowledge of Numerical Weather Prediction (NWP) models because the overall skill of the NWS forecast program beyond 12 hours is driven primarily by operational models and the skill of the forecasters to correctly interpret and use them. The providing of NWP training will be especially critical during the transition from FY 2005 to FY 2006, as the NWS operational mesoscale Eta model is scheduled to be replaced with a version of the Weather Research and Forecasting (WRF) model on September 30, 2005. Preparation of training for this change will be the focus of FY 2005 activities.

Two COMET Project Scientists have been assigned and collocated with NCEP's Environmental Modeling Center to develop training for the NWP PDS (funding including salaries including and computer support is shown in Table 3). In FY 2005, these positions will add to PCU 2, "Understanding Current Characteristics of Operational NWP Models". Specifically, they will include an entirely new suite of information for the non-hydrostatic version of the WRF. The brief section on non-



hydrostatic models in PCU 1, "Understanding NWP Models and Their Processes" will be expanded. Cases showing practical examples applying the information in those materials will be added to PCU 3, "Using Numerical Guidance in the Forecast Process". Teletraining on the new model will be provided, including the possibility of multiple sessions if the scope of the training deems it necessary. Teletraining on the Meteorological Development Laboratory's (MDL's) statistical downscaling will be provided concomitant with field availability of MDL downscaling products.

A second training emphasis in FY 2005 will concentrate on medium and short-range ensemble forecasts (MREF and SREF, respectively) at NCEP and elsewhere. Training needs will be driven by the availability of data from the MREF and SREF to Weather Forecast Offices (WFOs) via AWIPS. This data is expected to be provided to the field in FY 2005 as bandwidth improvements and AWIPS upgrades come online. To provide information on these operationally available ensemble prediction systems, a one-stop interface (similar to the PCU 2 NWP Matrix) for information on MREF and SREF systems, initiated in FY 2004, will be completed in FY 2005. Additionally, teletraining to supplement the ensemble module completed in FY 2004 will be developed and delivered.

Dispersion modeling is the third emphasis for NWP training. A second case study will be added to the dispersion case study completed in FY 2004. Additional dispersion model training is described in subsection (Q) below.

#### D. Integrated Sensor Training (IST) PDS

The IST PDS team will make available to field users easily accessible, short teletraining and/or Web-based training modules on the characteristics of new and derived data sets, on how to utilize these data sets on AWIPS, and on how to best integrate these data sets with other data sets to improve the warning and forecast process.

The areas of highest priority for development in FY 2005 are:

- Using Radar Data and Products
- Using Satellite Data and Products including the development of a new Satellite Hydrometeorology (SHyMet) course
- AWIPS Multi-Source Data Displays

- Model Data Assessment (in coordination with NWP PDS)
- Using AWIPS in the Forecast Process
- Integrating VISITview software into the WES
- NWS Learning Management System (LMS) Implementation and Further Development

Funds are provided to pay salaries/benefits for employees at the Cooperative Institute for Research in the Atmosphere (CIRA), and at the Cooperative Institute for Meteorological Satellite Studies (CIMSS). These employees develop distance-learning materials associated with the IST PDS. NOAA's Virtual Institute for Satellite Integration Training (VISIT) team includes staff from NWS, National Environmental Satellite, Data, and Information Service (NESDIS), CIRA and CIMSS. The VISIT program provides science infusion and training directly to forecasters and other staff. Training is done by teletraining sessions using VISITview software, which allows for a live, annotated presentation of graphics with an expert instructor. This funding provides continued support and evolution of the VISITview software.

Support is provided for all aspects of developing and conducting live teletraining sessions, such as scheduling, monitoring, evaluating, and issuing certificates of completion. IST PDS/VISIT teletraining sessions are archived and some include instructor audio and annotations. The archived sessions are available for asynchronous use by all forecasters and staff as World Wide Web (WWW)-based or stand-alone training on their computers.

Another significant effort in FY 2005 will be the completion and initial offering of the Satellite HydroMeteorology (SHyMet) course. The main goal of the course is to prepare users for the latest polar orbiting and geostationary satellite data, and products as applied directly to NWS warning and forecast programs. The course will offer SOOs and satellite focal points several lessons of material via teletraining and the WWW. The course will be completed early in FY 2006 with a 1-week in-residence workshop.

IST PDS/VISIT staff will work with OCWWS Training Division staff to implement the Learning Management System (LMS - described in Section VII) during FY 2005. A major activity will be to upgrade the LMS to provide all aspects of teletraining support from registration and scheduling to evaluation and certificates.

As part of the IST PDS, the WDTB will continue to offer an AWIPS-based WSR-88D Distance Learning Operations Course (DLOC) for those NWS meteorologists and hydrologists who have either not taken the original 4-week, in-residence WSR-88D Operations Course or a previous DLOC training offered by the WDTB. This course includes a one week workshop at WDTB in Norman, OK.

The National Polar-Orbiting Operational Environmental Satellite System (NPOESS) program will provide NWS with funding to continue development of an NPOESS information and training web site at COMET. NESDIS will continue to provide funding to the NWS for COMET to provide additional Geostationary Operational Environmental Satellite (GOES) updates on the COMET Meteorology, Education and Training (MetEd) website and in the Meteorology section of the NWS LMS Library.

#### E. Forecaster Development Program PDS

The Forecaster Development Program (FDP) provides a training plan for new meteorologist interns (referred to as interns hereafter) to prepare them for a career as a full-fledged meteorologist. Training materials associated with the FDP is also relevant to newly hired forecasters who lack NWS experience. The FDP contains three phases:

- Operational Basics - Ensures interns have the skills needed to perform the duties currently associated with the Hydrometeorological Technician (HMT) position.
- Forecast Familiarization - Provides interns with a set of forecast-related training material to be completed while working standard HMT rotation. Allows interns to gain a common base of knowledge on operational topics.
- Professional Development - Encourages continuing education for meteorologists and helps to decide the career path based on the intern's interests.

During the first quarter of FY 2005, an advisory team will review the FDP and submit a report to the FRG with recommended changes. Goals of the review process will be to: 1) identify any new training requirements which need to be added to the FDP; 2) determine if there will be an in-residence course to supplement and/or replace current training requirements and if so, design accordingly; 3) identify any existing training which needs to be updated or revised; and 4) identify training which is no longer relevant and needs to be removed from the FDP.

Upon approval of any or all of the recommendations by the FRG, NWSTC will work with the Regions/NCEP to begin implementing the recommended changes. If approved, the new FDP in-residence course will be targeted for delivery in FY 2006.

#### F. Management, Supervision, and Leadership PDSs

The NWS Strategic Plan targets all supervisors to complete leadership training by the end of calendar year 2005. Much of this training will be accomplished through the Management, Supervision, and Leadership PDSs.

There are four PDSs defined in this area:

- Office Management and Administration
- Leadership
- Human Resource Management
- Customer/Partner Service Management

In order to fulfill training requirements associated with the above, three courses will continue to be offered by the NWSTC. The 1-week "Field Operations Management" course for the first-line management team at field offices provides basic management concepts for those staff who act as office manager when the MIC/HIC or NCEP Center Director is out of the office. These concepts include workplace, customer, and media communications, leave and travel management, basic labor relations, conflict management, and performance and discipline. The first-line management team includes the SOO, Warning Coordination Meteorologist (WCM), DOH, Lead Forecasters, Senior Hydrologic Forecasters, and Senior Hydrometeorological Analysis and Support (HAS) Forecasters at each field office.

The "Management and Supervision" course for Meteorologists-in-Charge (MICs); Hydrologists-in-Charge (HICs); Electronics Systems Analysts (ESAs), Data Acquisition Program Managers (DAPMs) and NCEP, Regional, and National Headquarters supervisory personnel fulfills the Office of Personnel Management 80-hour requirement for management and supervision training. Topics addressed include communication, motivation and awards, personnel management, labor relations, conflict management, and situational leadership. First line management team members may attend the "Management and Supervision" course

at the discretion of Regional/NCEP management on a space available basis.

In addition, the "Executive Leadership Seminar (ELS)" for managers and NWS Headquarters program leaders will continue. This course develops key leadership competencies through an interactive and integrated approach. The content includes management versus leadership, ethical decision making, stress and wellness, use of power, and advanced communication. Open to all federal agencies, it offers an effective learning environment and venue for the open exchange of best practices.

Contract on-site team training and centralized team facilitator training will continue for ten new sites in FY 2005.

In addition, a "WCM Course" will be offered in FY 2005 for new WCMs to provide the basic knowledge and skills necessary to be an effective WCM at a WFO. The course covers topics such as dealing with the media, time management, storm damage assessment, post disaster surveys, spotter networks, presentation skills, community relations, and operational warning philosophy.

A Labor and Management Relations (LMR) training package, requested by NWS senior management to provide formal and consistent LMR training to all NWS managers, will be prepared. Since the NWS collective bargaining training is unique to our agency, a set of training materials will be developed for use by Deputy Regional Directors, Headquarters, or other managers. A list of materials to be made available includes:

- A PowerPoint presentation.
- Handouts of 10-Minute Lessons.
- As appropriate, scenario sheets which the instructor can use as exercises.
- Facilitator handbook for the lessons.

These materials will all be on a CD. A strong complement of scenarios and handouts will support each lesson and emphasize key learning points. The project is slated for completion by the end of the calendar year 2004, and training for managers is to be conducted in calendar year 2005.

## G. Hydrology PDSs

The following PDSs describe the training associated with the NWS Hydrologic Services Program:

- Managing the Hydrology Program
- Hydrologic Forecasting
- Model Calibration and Hydrologic Procedure Development
- Forecasting Flash-Flood Events
- Assessing Near-Term Hydrologic Guidance and Issuing Public Forecasts
- Ensemble Hydrologic Forecasting
- Assimilating Hydrometeorological Data
- Quantitative Precipitation Forecasting

The highest priority activities for FY 2005 were determined from these PDSs. The "Flash Flood Hydrology and Quantitative Precipitation Estimation (QPE) Workshop" (first offered in FY 2004) is geared towards forecasters who issue flash flood watch and warning products, and is developed around the Flash Flood Monitoring and Prediction (FFMP) tool available at all WFOs.

The dedicated hydrology development team at COMET will continue in FY 2005, and will be funded jointly by the OCWWS Training Division and the NWS Office of Hydrologic Development (OHD). Funding for this activity is shown in Table 3. This team will facilitate additional hydrology training which otherwise would not have been possible given FY 2005's tight budget constraints. The team will focus on the development of training in the following areas:

- Flash Flood/Intense Precipitation
- Basic Hydrologic Science
- Advanced Hydrologic Science
- Hydrologic Ensemble Forecasts

To address the topics mentioned above, in addition to the 1-week "Flash Flood Hydrology and QPE Workshop" discussed previously, a new 2-week "Advanced Hydrologic Science Workshop" will be offered. This course is aimed at RFC DOHs, RFC senior hydrologists, and WFO Service Hydrologists. These positions are responsible for the implementation of hydrologic science in the RFCs and WFOs. A distance learning activity will be initiated

to provide education and instruction on basic hydrologic science. The course will be fully outlined in FY 2005, and the initial set of deliverables will be completed. In addition, an asynchronous workshop on hydrologic ensemble forecasts will be developed.

NWSTC will continue to offer a "WFO Hydrology Program Management" course, providing training to all Service Hydrologists and hydrologic focal points on basic concepts specific to the management of office hydrology programs. Also, one WFO Hydrologic Forecasting System (WHFS)-related course will be provided at NWSTC. The initial "WHFS Workshop" trains new service hydrologists, hydrologic focal points, and one other WFO attendee. The "Advanced Hydrologic Applications" course will be offered for Service Hydrologists and RFC forecasters to focus on the implementation of the site-specific forecast functionality and the multi-sensor precipitation estimation (MPE) function within the AWIPS WHFS software. The goal is to provide this training to prior attendees of the "WHFS Workshop".

Enhancements to the fielded versions of the AWIPS WHFS software and the NWS River Forecast System (NWSRFS) software will be addressed via teletraining. NWSTC hydrology staff will work closely with the OCWWS Hydrologic Services Division (HSD) and OHD personnel to determine the contents of the teletraining modules. The NWSTC hydrology staff will develop the teletraining materials.

A "Cold Regions Workshop" will be held in FY 2005 to facilitate a better understanding of the factors affecting the hydrologic cycle in northern climates. The workshop will present and discuss possible topics such as ice formation, ice jam forecasting, cold weather hydrologic equipment, ice data collection, snow physics, wintertime river forecasting, ice modeling and snow data to an audience of operational hydrologic forecasters and engineers. This workshop will also present an opportunity for all attendees and presenters to reexamine topics presented at the last "Cold Regions Workshop" held in November 2002.

Funding will continue to support travel to workshops provided by OHD subject matter experts. Topics for these workshops will be selected from among the following:

- RFC HAS Forecaster workshop
- Threshold Runoff (ThreshR)/Flash Flood Guidance (FFG) workshop
- Ensemble Streamflow Prediction (ESP) workshop
- Reservoir Operations workshop
- Basic Operational Forecast System (OFS) workshop
- Advanced OFS workshop
- FLDWAV model workshop
- Model Calibration workshop
- Hydrologic Database workshop
- DOH Science workshop
- Hydrologic Routing/Hydraulics workshop
- Statistical Hydrology workshop
- Snow Modeling workshop

Final priorities will be determined by the regional HSDs, in consultation with OCWWS HSD and OHD. The workshops will be addressed in priority order, with the total number conducted being dependent on the number of attendees at each workshop. A minimum of five workshops will be conducted.

As in past years, funding can be made available for WFO, RFC, and NCEP staff to take hydrology and hydrometeorology training at local universities or through other means. This funding is included within the "Regional Training Funds" entry in Table 2.

#### H. AWIPS PDSs

The training requirements in this area emanate from the three AWIPS PDSs: Operating AWIPS, AWIPS System Administration and Maintenance, and Implementing Local Applications on AWIPS. These requirements will continue to be addressed via the following courses at the NWSTC:

"AWIPS Operations Support" is a course for SOOs, DOHs, and AWIPS Focal Points designed to ensure all sites have a trained focal point available to provide operational support to AWIPS and ensure its proper use.

The "AWIPS Applications" course optimizes local developers' abilities to design and utilize AWIPS local applications, including important software and Local Data Acquisition and Dissemination (LDAD) utilization training.



The "LINUX for WFOs/RFCs" course, offered for Electronics Technicians (ETs) and Information Technology Officers (ITOs), provides intermediate level LINUX skills to assist in support of NWS IT-based systems.

To meet attrition-related training requirements, "AWIPS Systems Manager" courses for ESAs and ITOs will be offered. This course is intended to provide ESAs (and/or RFC/NCEP equivalents) and ITOs with an understanding of AWIPS hardware, communications, software components, and dataflow.

Another activity which the NWSTC will focus on in FY 2005 is the replacement of Informix in the text product database in AWIPS with Postgres in early FY 2006. Working with the NWS Office of Science and Technology (OS&T), NWSTC AWIPS instructors must train-up on, develop, and deliver Postgres deployment training, within the NWSTC's FY 2005 course schedule. As of this time, no firm timelines for the project have been established. Other issues NWSTC and OS&T are working on include the involvement of NWSTC staff with the developers, timeframe for delivery of the new system to the NWSTC, scope of deployment training, and OS&T's expectations of delivered training. As these issues become clear, NWSTC will commence planning and determine required manpower and resources to accomplish the desired training.

Finally, funding is provided for local contractor-provided Information Technology (IT) systems training related to AWIPS. These funds, described in subsection (I), will also be used to procure contract training for local systems administration training needs.

#### I. Engineering, Electronics, and Facilities PDSs

There are 11 PDSs in these areas:

- Facilities Maintenance
- Facilities Management
- Environmental Compliance
- WSR-88D Maintenance
- NOAA Weather Radio (NWR) Maintenance
- Upper Air (Profiler) Maintenance
- Data Acquisition / Dissemination Systems Maintenance
- Information Technology (IT) Systems and Network Support
- General Engineering Skills

- Safety and Health
- Automated Surface Observing System (ASOS) Maintenance

The above areas are critical to the day-to-day operation of the NWS. Many of these directly impact the ability of the NWS to meet our GPRA goals. Training is focused on NWS personnel being able to install, operate, and repair the systems integral to our ability to issue daily forecasts and warnings. Another major focus is to ensure adequate and economical facility maintenance to meet operational requirements. Much of the training will be accomplished via classes offered by the NWSTC.

Training will include courses on new systems as well as continuation of currently used systems. These courses include "ASOS Maintenance," "Automated Radio Theodolite (ART) Rawinsonde System Maintenance," "WSR-88D Maintenance," "Console Replacement System (CRS) Maintenance," "Crown Transmitter Maintenance," "Scientific Radio Services (SRS) Transmitter Maintenance," "Armstrong Transmitter Maintenance," "CRS Network Operations," "Fall Protection and Rescue" (attrition and recertification courses), "Environmental Compliance," and "Safety Training (both in-residence and online). Descriptions of the above classes can be accessed via the "NWSTRN" Home Page at:

<http://www.nwstc.noaa.gov/nwstrn/classes.html>

A new "WSR-88D Open Radar Data Acquisition (ORDA) Maintenance" course will be offered in FY 2005. The course provides the skills and knowledge required to support the national deployment and perform operation and maintenance of the new ORDA System, explaining the interconnections of the system as well as the maintenance philosophy.

Radiosonde Replacement System (RRS) Maintenance is another new course at NWSTC. The course provides the skills and knowledge required to support national deployment, operations, and maintenance of the new RRS system. This course was piloted in FY 2004 and is ready to support the full deployment in FY 2005."

Concurrently, funding has been identified to support local facilities maintenance and IT systems training to ensure field staff know how to repair vital mechanical and electrical systems; are aware of good maintenance practices; and possess a clear knowledge of how to comply with building, electrical, mechanical, environmental, and safety codes and regulations.

These funds will also be used to provide necessary training for the recently created IT Officer position at WFOs and are included in the "Regional Training Funds" portion of Table 2.

#### J. Cooperative Observer/HMT PDSs

There are three PDSs which describe Cooperative Observer and HMT-related training:

- Cooperative Program Management
- Surface Observing Program
- Upper Air Program

Training in FY 2005 will focus on the Cooperative Program Management and Surface Observing Program PDSs. A "Data Acquisition Operations" course will continue to be offered at NWSTC to teach all NWS operational and management staff involved in data acquisition to address identified training deficiencies associated with equipment operation, and to review the latest NWS policies and procedures of the data acquisition process. The NWSTC attrition "Cooperative Network Operations" course provides training for those managing the Cooperative Observing Program. The course includes details on program requirements, purposes, and objectives with topics including observer recruitment, equipment installation and maintenance, and network data quality control. The course trains staff how to maximize the accuracy and completeness of data used for NWS modeling and operations.

#### K. Marine Weather Services PDS

To address the training needs identified in the Marine Weather Services PDS, funds will be provided to develop two or three Regional Marine Workshops in FY 2005. Regional Marine Workshops are primarily for the WFO marine program leaders and other experts within and outside the NWS. The regional marine program managers will define the curricula for these regional workshops at a marine program managers meeting to be held in November 2004.

A COMET development team will continue to work with Marine PDS Producers to develop additional web training modules. COMET plans the following marine activities in FY 2005:

- Wave Life Cycle II: Propagations and Dispersion module

- Winds in the Marine Boundary Layer module
- True Sea State Forecasting module
- Shallow Water Wave Processes module
- Two Rip Current mini-modules
- Two case-based teletraining sessions on wind and wave forecasting in the marine environment

Funds are also identified for PDS producers to meet to discuss the current status and future updates to the PDS.

#### L. Fire Weather Related PDSs

Materials or courses to address the majority of training requirements for both the Fire Weather and Incident Meteorologist (IMET) PDSs are already available and continue to be amalgamated for access on NWSTRN by the PDS Producers. The "IMET Workshop" will be held in FY 2005 to train IMETs on new technology advances and techniques.

#### M. Climate Services PDS

To meet critical training requirements defined in the Climate Services PDS and the NWS Regional and Local Climate Services Implementation Plan, two in-residence training courses will be conducted at COMET in FY 2005. The "Climate Variability Workshop" provides climate focal points with resources to answer questions from the public on how climate fluctuations affect local weather variability, as well as information on the latest developments in climate analysis and forecasting. Also, a new workshop, "Climate Focal Point Operations Skills" will focus on resources and products of the U.S. Climate Services infrastructure, development of skills in stewardship practices of the Climate Observing System, and training on developing and delivering localized climate products. This new workshop will be offered twice in FY 2005, with one offering being funded by the OCWWS Climate Services Division (CSD) using non-NWS funds.

Joint efforts between COMET and OCWWS CSD will continue in FY 2005 to convert Climate Variability Workshop lectures into webcasts or alternative online presentations. OCWWS CSD and NCEP's Climate Prediction Center (CPC) will complete production of two distance learning courses on CPC's Extended and Long Range Forecasts. Each course will consist of online training introducing the basis and procedure for each of the forecasts, and of teletraining presenting a specific forecast case.

#### N. Administrative PDS

The majority of training materials for the Administrative PDS is already available and continues to be amalgamated for access on NWSTRN by the PDS Producers. Funds will continue to be allocated for Regions/Offices to conduct formal Administrative Support Assistant (ASA) training during FY 2005. This training will include travel/per diem costs to attend residence and correspondence courses, and commercially available training. Funding is included as part of the "Regional Training Funds" line in Table 2.

#### O. IFPS PDS

Funding has been set aside in Table 2 for IFPS training needs. To determine IFPS training priorities for FY 2005, the NSTEP Team will work with Digital Services program leads and experts to have each Region document its preferred methodology, including smart tools and collaboration. Based on these methodologies, consensus will be reached on a national digital services methodology in early FY 2005. Funds may also be applied to support scientific training and customer outreach training.

The above mentioned national digital services methodology will be used to develop the FY 2005 IFPS training as well as impact future digital services policy. Once specific training is agreed upon, it will be posted on NWSTC's "NWSTRN" webpage.

NWSTC will offer a continuation of the IFPS Focal Point Distance Learning Course and new IFPS Delta training in FY 2005.

The IFPS Focal Point Distance Learning Course is a distance learning version of the IFPS setup and configuration parts of the eight and a half day IFPS Focal Point residence course which was held previously at the NWSTC. The course focuses on providing the new IFPS Focal Points with the knowledge and skills needed to become an IFPS site expert and system administrator.

Delta training is being offered for IFPS Builds 16 and 17. This training is composed of web-based modules, teletraining and short training aids or exercises. The Delta training focuses on two audiences. One training segment, designed for IFPS Focal

Points, focuses on preparing for the new IFPS Build and configuring the new capabilities. The other training segment, on the new functionalities is for operational staff.

In addition, the "Boundary Layer Meteorology" symposium will continue at COMET in FY 2005. This symposium, for SOOs, focuses on training in micrometeorology and boundary layer processes and evolution to form the science foundation for better use of IFPS capabilities, especially improvements to smart tools and smart initializations, to provide improved digital graphical forecast products to NWS customers. It also is an opportunity for science infusion from the NWS OS&T, academia, NOAA laboratories, and national and local NWS offices into the IFPS operational process.

#### P. Winter Weather PDS

The goal of this PDS is to address the skills needed to perform winter weather forecasting duties and supporting activities in accordance with the NWS Mission. To support this goal, WDTB will begin development of a "winter weather" track to AWOC. WDTB will deliver the 10 to 16 hours of winter weather track material in FY 2006. The majority of the material will be delivered asynchronously, such as web-based modules, and recorded teletraining sessions. Some of the material will be delivered synchronously via teletraining, and offered a sufficient number of times (more than 70) to accommodate completion by all students. As part of the winter weather AWOC track, WDTB will provide at least two Winter Weather Simulations (fulfills a requirement established by NWS Instruction 20-101).

In addition, the Meteorological Service of Canada (MSC) hosts a "Canada Winter Weather Workshop" at COMET. The MSC provides four to six slots for NWS forecasters to attend this course (shown in Table 1), which is designed to increase their understanding of winter season significant weather, and, following the course, to transfer this knowledge to their forecasting colleagues.

#### Q. Other Training Activities - Table 1

Dispersion Forecasting Training Course: In support of national Homeland Security and to support the requirement for all NWS field offices to perform an annual office exercise simulating

response to the release of hazardous gases or materials in the atmosphere, COMET will offer a new "Dispersion Forecasting Training" Course for SOOs and Office Focal Points late in FY 2005. The emphasis of the course will be on how to interpret model predictions, and on the value that local expertise can add to any dispersion prediction. Two major simulations of actual events will be used. This course will augment a web-based training program for dispersion and response to toxic releases into the atmosphere which will be completed in early FY 2005.

#### R. Other Training Activities - Table 2

Regional Training Funds: These funds support a variety of training needed at the regional and local level. Typically, the funds are used for:

- Local facilities / IT funds: Described in Section VI, subsection (I).
- ASA training: Described in Section VI, subsection (N).
- Regional Collaborative Projects: This supports NWS/university collaborative projects, workshops, and associated computer and travel for collaborative research.
- System Administration, Networking and Security (SANS) training: Local IT training to meet security requirements for those who have root password access.
- Hydrology training: Described in Section VI, subsection (H).

Individual Regions and NCEP allocate these regional training funds as necessary to address specific training needs, and will provided detailed accounting of these funds to the OCWWS Training Division in FY 2005.

University Assignment Program (UAP): Funds are provided to fund selected staff for full and part-time training assignments in a job- or career-related study at an accredited educational facility. The funding for this item comes directly from the OCWWS Front Office budget.

Air Pollution Training: Funds are provided to begin development of a training program for all NWS operational staff to understand and implement hazmat and air pollution forecast services and products for a variety of governmental and private sector users. This will likely be a multi-year effort, with

FY 2005 to focus on development of web modules.

Space Weather Training: Space weather is becoming more operational, requiring increased awareness by NWS employees. COMET will develop a 45- to 60-minute distance learning module to facilitate the understanding of NWS staff on the potential impact of space weather phenomena on general aviation and other infrastructure.

#### S. Other Training Activities - Table 3

COMET/University Corporation for Atmospheric Research (UCAR) Staff Grant: The COMET/UCAR Cooperative Agreement supports the costs of running the COMET classroom; costs of building and archiving case studies for use in the classroom and with the WES; costs of fulfilling data requirements for SOOs; costs for creating COMET distance-learning modules; costs for supporting the SOO program and training and WCM resource sites; and costs of maintaining the COMET MetEd Internet site.

NWSTC Administrative Funds: Supports annual operating expenses and staff travel and training at the NWSTC.

COMET Van for Students: Supports the use of three vans for student use and transportation during COMET residence courses.

COMET NWS Subject Matter Expert (SME) Travel: This supports SME travel in association with COMET meetings and distance-learning development. Costs of \$4,000 per week are built into each COMET residence class costs to cover government guest instructors.

Learning Management System (LMS)-Recurring Costs: Recurring maintenance costs and server hosting costs are required to maintain the NWS LMS yearly. Funds will also be needed for further customization of the LMS to add new and improved functionality.

OCWWS Training Division (OS6) Budget: This supports Training Division and COMET Branch employee travel and training activities during the year.

Teletraining Communications: This supports routine commercial communications and bridging costs for provision of teletraining sessions by the three NWS training facilities and other providers, such as NESDIS, Regional Headquarters offices, and



local offices.

OS6 Innovation Fund: Discretionary funding has been set aside for the Chief of the OCWWS Training Division to fund training initiatives which occur during FY 2005 outside of the NSTEP process. Such activities could include DoC or NOAA mandated training initiatives or other new initiatives deemed important by the Chief of the OCWWS Training Division.

American Meteorological Society (AMS) Journals: This supports purchasing the AMS journals "Monthly Weather Review," "Weather and Forecasting," and "Journal of Hydrometeorology" for all field offices via Internet access only, and Regional Headquarters, NWS Headquarters, and NCEP Service Centers via hard copy and Internet access. The cost of this funding is shared between NSTEP and OS&T.

## **VII. NWS LEARNING MANAGEMENT SYSTEM**

The OCWWS Training Division is overseeing the development and implementation of a new Learning Management System (LMS) to streamline planning, registration, completion, and tracking of training activities at all levels of the NWS.

The NWS LMS is a web-based system hosted by GeoLearning Corporation. It is part of a NOAA-  
(<http://e-learning.doc.gov/noaa/>) and DoC-wide  
(<http://e-learning.doc.gov/>) LMS initiative. Framed as a virtual campus, the DoC LMS Website organizes training by bureau and line office within DoC. Three dimensional graphics illustrate a realistic campus environment and provide the context in which employees navigate the site. All NWS employees will benefit from this system. The "My Plan" feature of the LMS presents a mechanism for employees and their supervisors to formulate personalized training plans in support of their Individual Development Plans (IDPs). The LMS also gives access to online training and registration for instructor-led (residence and teletraining) courses. Progression through all of these courses is tracked through the LMS. With the reporting features, employees can list and print their training transcripts. Managers can monitor the training activities of their staff, and Headquarters personnel can quickly generate summary reports of training progress for their regions.

The LMS will provide centralized access to all training offered by each of the NWS training centers. In addition, SOOs can use the system to develop and track local training activities, such as WES scenarios.

Another part of the LMS is the inclusion of third-party on-line courses on a variety of topics. All NWS employees and contractors have access to a suite of courses developed by NetG at least through May 31, 2005. Regions/Offices also have the opportunity to purchase an additional library of courses offered by Skillsoft at a flat fee.

The LMS will automate class scheduling and registration features currently accomplished by an intensive paper-based process. Automation of these tasks allows courses to be assigned much more efficiently and provides a mechanism to quickly fill vacant slots due to last minute cancellations.

At the time this document was written, NWS was implementing GeoLearning's Version 3.8 of the LMS in its AWOC Facilitator Workshops. This version will be used to supplement the administration and tracking of AWOC. Significant system issues were identified during the AWOC Workshops, and NWS is working with GeoLearning on these issues prior to implementation. The OCWWS Training Division will supply detailed documentation and training to all offices on using the new NWS LMS, which will be accessible via the web at:

<http://www.nwstraining.noaa.gov>

NWS and NOAA is also going to work with GeoLearning in early FY 2005 to evaluate GeoLearning's new GeoMaestro 4.3 LMS product in the hope of transitioning to this product during FY 2005.

#### **VIII. INTERNATIONAL TRAINING FOR FY 2005**

Each year, the NWS Office of International Affairs (IA) provides training to a variety of international agencies. Striving for the goal to capture more NWS national training activities in NSTEP, IA's plans for international training for FY 2005 are summarized below.

The purpose of IA's International Strategic Training and Education Plan (ISTEP) is to promote the integration of

international and NWS training for cost savings and to harmonize meteorological and hydrological forecasts and products across borders. The budget for this training is \$574,000, which comes outside of the NSTEP funded training budget.

Below are specific activities planned in FY 2005:

1. Collaboration with Canada. IA is developing an annex to their Canadian Bilateral Agreement to capture shared training between our two countries. Training events such as the Annual Great Lakes Workshop bring Meteorological Services of Canada (MSC) and NWS forecasters together to integrate and harmonize products and to improve the accuracy of forecasts in the region. Additional MSC training has been occurring in Alaska, and the training conducted in these workshops needs to be built into future training goals. These workshops have focused on fire and ice in the last few years.

2. NCEP "Desks". There are two forecasting programs and one climate training program called "desks" at NCEP. The South American and Tropical Desks bring forecasters from countries including Mexico, Colombia, Jamaica, Chile, and others, into a one-on-one tutoring program devoted to numerical weather prediction and improving the lead-time of storm predictions and mitigation of natural disasters. In addition, the African Desk tutors climate forecasters with emphasis on seasonal predictions to help Africa combat drought and famine. The African Desk may soon instruct on NWP and forecasting. A plan is in the works to have selected NWS forecasters visit the desks for a week to exchange knowledge and skills with current Desk fellows from other countries.

3. Distance Learning Graduate Courses. IA is seeking ways to improve forecasting and retrieve more meteorological and hydrological data in vital areas to the NWS such as the Caribbean, Mexico, and Central and South America. These areas have a dire need for advanced degrees for both retention and improved forecasts. A mechanism is being developed to offer Masters in Meteorology and Hydrology Degrees online at no cost to the students. We anticipate it will take a student working part-time in the evenings up to four years to finish their degree requirements using e-learning along with weekly "live" instructor lectures. IA is working with several universities and contractors to put a program in place during FY 2005.

4. South Africa Teachers Course. Annually (usually in July or August), two or more South African school teachers come to the United States to take a meteorology course to enable them to teach meteorology to their students upon returning to the classroom. This has been going on for the last five years with positive results. Several NWS staff is involved in this training.

5. Hurricane Training Course. Annually, up to 22 international forecasters gather at NCEP's Tropical Prediction Center to discuss latest technologies on hurricane/tropical storm prediction. Several NWS employees are involved in the planning and training of these forecasters.

6. Pacific Training. The Pacific "Desk" in Hawaii, similar to the NCEP desks referenced earlier, takes meteorologists from the pacific islands and trains them for three weeks on forecasting. One large benefit of the course is notebook computers which are given to each graduate. Computers are scarce and electrical power is sporadic on several of the pacific islands. A notebook computer will run for a few hours on a fully charged battery and give the forecaster a better chance to stay online during critical times.

#### **IX. "DEFUNDED" AND UNFUNDED TRAINING REQUIREMENTS FOR FY 2005**

Each year, the OCWWS Training Division is asked to complete an exercise to detail the impact of possible cuts (sometimes up to \$3,000,000) to the NSTEP training budget during the current FY. In preparation for this, the OCWWS Training Division will work with the FRG to develop a prioritized "defunded" list of training activities which would be cancelled with any budget cuts. In addition, a prioritized listing of all unfunded training requirements for FY 2005 resulting from the yearly prioritization and budget balancing processes will also be developed. The FRG will review, update and prioritize these requirements to meet the NWS Corporate Board or FIRC unfunded request deadlines. Both the "defunded" and unfunded lists will be completed during the first quarter of FY 2005.

Table 1 - FY 2005 Residence Training Requirements (9/7/04) - dollar figures in K

Note: New Items for FY 2005 shaded in yellow																	Supplies,			
	Students/ Class	Days	Number of classes	Fund Source	ER	SR	CR	WR	AR	PR	NP	Other	OOS	Extra Slots	Total Slots	Student Costs per class	Cont./ Guest In. Costs	Total Cost/ Class	Total Cost	
NWSTC																				
ASOS Maintenance	8	13	4	ASOS	8	8	6	4	2	3	0	0	1	0	32	23	4	27	108	
ART Rawinsonde System Maintenance	6	13	2	Base	2	2	3	2	1	0^	0	0	0	2	12	17	4	21	42	
Fall Protection & Rescue (recertification)	16	2	11	Base	30	38	40	30	10	10	0	0	16	2	176	15	12	27	149	
Fall Protection & Rescue (attrition)	16	3	2	Base	6	5	8	5	0	2	0	0	3	3	32	17	12	29	41	
Fall Protection & Rescue (recertification)				NEX	NEX funds 1 day of class - devoted to climbing radomes (50%)														149	
Fall Protection & Rescue (attrition)				NEX	NEX funds 1 day of class - devoted to climbing radomes (33%)														19	
WSR-88D Maintenance	8	33	3	NEX	4	6	6	2	1	0	0	0	6	0	25	52	9	61	183	
WSR-88D Open RDA Maintenance	8	6	14	ORDA	BY SCHEDULE OF INSTALLATION										112	14	3	17	238	
CRS Maintenance	8	6	5	Base	7	10	8	9	2	3	0	0	1	0	40	14	2	16	80	
AWIPS Systems Manager	16	12	4	AWIPS	12	13	14	10	3	2	4	3	3	0	64	44	8	52	208	
AWIPS Local Applications	16	3.5	1	AWIPS	3	3	4	3	1	1	1	0	0	0	16	17	3	20	20	
AWIPS Operations Support	16	8	3	AWIPS	8	10	11	8	1	1	1	7	0	0	48	31	6	37	111	
Executive Leadership Seminar (ELS)	35	8.5	2	Base	13	14	16	13	2	2	3	5	2	0	70	73	28	101	202	
LINUX for WFOs/RFCs	12	8	5	AWIPS	11	15	17	11	2	1	2	0	1	0	60	24	3	27	135	
Management and Supervision	20	9.5	3	Base	11	10	17	12	2	2	3	2	1	0	60	42	12	54	162	
Field Operations Management	24	4.5	4	Base	17	24	27	18	4	2	4	0	0	0	96	29	9	38	152	
Cooperative Network Operations	16	8	2	Base	6	6	7	5	4	4	0	0	0	0	32	31	7	38	76	
WFO Hydrology Program Management	16	8	1	Base	3	4	4	3	1	1	0	0	0	0	16	31	6	37	37	
WHFS Workshop	8	3.5	1	AWIPS	1	2	2	2	1	0	0	0	0	0	8	8	1	9	9	
Advanced Hydrologic Applications	8	3.5	5	AWIPS	7	10	11	8	2	1	0	1	0	0	40	8	3	11	55	
Data Acquisition Operations	16	3.5	4	Base	14	14	17	9	4	6	0	0	0	0	64	17	3	20	80	
CRS Network Operations	8	3	2	Base	3	4	4	3	1	1	0	0	0	0	16	8	1	9	18	
Environmental Compliance (attrition)	27	3	1	Base	5	6	6	5	1	1	0	0	3	0	27	28	17	45	45	
Crown Transmitter Maintenance	5	3	2	Base	5	0	1	2	1	0	0	0	1	0	10	4	1	5	10	
Safety Training (attrition)	30	3.5	1	Base	4	7	8	6	1	2	0	0	2	0	30	33	17	50	50	
SRS Transmitter Maintenance	4	3	2	Base	3	0	1	2	1	1	0	0	0	0	8	4	1	5	10	
Armstrong Transmitter Maintenance	5	3	5	Base	6	0	1	14	0	3	0	0	1	0	25	5	1	6	30	
RRS Maintenance	4	6	11	RRS	BY SCHEDULE OF INSTALLATION										44	10	2	12	132	
WCM Course	25	8.5	1	Base	5	6	6	4	2	2	0	0	0	0	25	44	2	46	46	
COMET																				
Flash Flood Hydro & QPE Workshop	27	3	2	AWIPS	11	14	15	6	3	2	1	2	0	0	54	33	16	49	98	
Climate Variability Workshop	27	4.5	1	AWIPS	5	7	7	5	1	1	1	0	0	0	27	35	16	51	51	
Boundary Layer COMAP Symposium	27	4.5	1	Base	5	7	7	5	0	1	2	0	0	0	27	35	16	51	51	
Canada Winter Weather Workshop	6	10.5	1	Base	1	0	1	1	1	0	2	0	0	0	6	15	0	15	15	
Advanced Hydrologic Science	16	8	1	Base	3	4	5	3	1	0	0	0	0	0	16	30	24	59	59	
Climate Focal Point Operations Skills	27	3	1	AWIPS	5	6	8	5	1	1	1	0	0	0	27	35	16	51	51	
Dispersion Forecasting Training	16	3.5	5	Base	13	20	23	15	2	2	3	2	0	0	80	20	16	36	180	
WDTB																				
DLOC Workshop (held in Norman)	24	3.5	6	NEX	15	36	20	27	6	2	6	2	0	38	144	28	2	30	180	
AWOC Facilitator Workshop (for DOHs)	13	2	1	NEX	3	4	2	3	1	0	0	0	0	0	13	13	1	14	14	
													Days							
Summary													2 or 2.5	NWSTC		COMET/WDTB				
Funding													3 or 3.5	1000		1100		Per diem rates:		
NWSTC - OCWWS Base													4 or 4.5	1100		1200		KC (NWSTC):		
COMET - OCWWS Base													5	1200		1300		131 (85 and 46)		
WDTB - OCWWS Base													6	1300				Boulder (COMET):		
TOTAL OCWWS Base													8 or 8.5	1700		1700		135 (93 and 42)		
													9.5	2000		2200				
TOTAL AWIPS													10	2100						
TOTAL ORDA													10.5	2400						
TOTAL RRS													11	2500		2400				
NWSTC NEXRAD													12	2500						
WDTB NEXRAD													13	2800						
TOTAL NEXRAD													30	2900						
TOTAL ASOS													33	N/A		6200				
TOTAL RESIDENCE COSTS														6600						

^Note: PR to potentially host ART  
Maintenance class in Hawaii. Will  
coordinate with NWSTC.

**TABLE 2: FY 2005 NWS Training and Education Expenditures (9/7/04)**  
**Note: Dollar Amounts in K. All funds are Base or AWIPS unless noted**

**New items for FY 2005 Highlighted in Yellow**

	<b>FY 2005 Funding</b>	<b>FY 2005 Initiative/Other Funding</b>
<b>Non-Labor/Other</b>		
Satellite HydroMet. (SHyMet) Development Costs	74	0
Integration of RPG into the WES and Support	5 (NEX Funds)	0
Air Pollution Meteorology Training	20	0
Space Weather - COMET Module Development	50	0
Cost Management System Training	30	0
Cold Regions Workshop	40	0
<b>AWIPS PDS</b>		
AWIPS Warning-Related Build Training	10	0
AWIPS Training on New Forecasting Features	20	0
AWIPS Build Delta Training for System Administrators	20	0
<b>Aviation Weather Services PDSs</b>		
WES Case on Ceiling/Visibility	3	0
<b>Convective/Winter Weather PDSs</b>		
Advanced Warning Operations Course (AWOC) - "Winter" Track	22 (NEX Funds)	0
Level 3 Evaluation of NWS Training Using AWOC	20 (NEX Funds)	0
<b>Integrated Sensor Training - IST CI Salaries</b>	480	0
<b>Forecaster Development Course</b>	20	10 (NEX funds)
<b>Management, Supervision &amp; Leadership</b>		
On-site Team Training	50	0
<b>Hydrology</b>		
Hydrology Workshops	96	0
FFMP Enhancement Training	5 (NEX Funds)	0
<b>Marine Weather Services</b>		
Regional Marine Workshops	50	0
Marine PDS Support	20	0
<b>Fire Weather PDSs</b>		
Incident Meteorologist (IMET) workshop	75	
<b>IFPS PDS</b>		
Total FY 2005 Funding. Training Priorities TBD early FY 2005	288	0

	<b>FY 2005 Funding</b>	<b>FY 2005 Initiative/Other Funding</b>
<b>Regional Training Funds - Includes:</b>	257	0
Collaborative funds		
ASA funds		
Facilities funds		
IT funds. Covers items such as:		
Microsoft Active Directory Training		
Office Suite Training		
IT System Training		
IT Application Training		
COTS Applications Software		
Web Server, Administrative and Systems Training		
CISCO Router Training -O12		
Defacto Standard Applications Training		
Hydro Correspondence funds		
SANS Training		
Table 1 AWIPS/Base Residence Classes	2273	
Table 2 AWIPS/Base Items	1605	
Table 2 NEX funded Items	52	
Table 2 Initiative/Other Funding Items	0	10
<b>TOTAL DISCRETIONARY BUDGETS/FUNDING</b>	<b>3930</b>	<b>10</b>

**TABLE 3 - FY 2005 NWS Training and Education Expenditures  
(9/1/04)**

**Note: Dollar Amounts in K  
NON-DISCRETIONARY BASE FUNDING**

COMET/UCAR Staff-Grant (non-FTE)	2000
NWSTC Admin.	320
COMET Van for students	30
COMET NWS SME Travel	30
Learning Management System - Recurring cost	100
Training Division (OS6) Budget	150
Teletraining Comms	30
COMET Hydrology Team	160
<i>(Note: OHD funds \$200K in addition to NSTEP)</i>	
OS6 Innovation Fund	140
NWP - COMET Staff at NCEP	287
AMS Journals	60
<i>(Note: OS&amp;T funds \$60K in addition to NSTEP)</i>	
<b>TOTAL NON-DISCRETIONARY BUDGET</b>	<b>3307</b>



## **ATTACHMENT 1: SUMMARY OF FY 2005 IN-RESIDENCE TRAINING CLASSES**

### **NWSTC Courses**

#### **ASOS Maintenance - 13 days**

*Who Attends:* Technicians with ASOS maintenance responsibility. Pre-requisites.

*Objective:* To provide NWS Electronics Technicians with the knowledge and skills necessary to calibrate, perform preventive maintenance, and perform corrective maintenance on the ASOS system including all sensors. Corrective maintenance will be taught to the Field Replacement Unit (FRU) level consistent with the current ASOS maintenance philosophy. Students will be taught both the diagnostic and operational levels of ASOS communications software. Students will leave the course with an understanding of the overall concept of the ASOS system including the underlying algorithms.

---

#### **ART Rawinsonde System Maintenance - 13 days**

*Who Attends:* Electronics Technicians with ART maintenance responsibility.

*Objective:* To provide the electronic technician with the skills required to align, calibrate and maintain the ART system and associated ground equipment to National Weather Service standards.

---

#### **Fall Protection and Rescue - Attrition Training - 3 days**

*Who Attends:* NWS personnel required to climb elevated structures (less than 100 feet) as a function of their duties and have not attended initial fall protection training.

*Objective:* The course includes classroom instruction and hands-on training (equipment donning, estimation of safe clearance, climbing and simple rescue techniques for towers below 100 feet). Practical exercises are performed on the Rohn towers installed at NWSTC. Climbing/fall protection equipment (harnesses and 100% tie-off lanyards, etc.) will be individually fitted and issued to students during the class. Course attendees who will climb as part of their job will keep the equipment and take it back to their field offices. Participants are expected to wear sturdy shoes during practical exercises. Coveralls, safety shoes, and gloves are recommended.

---

#### **Fall Protection and Rescue - Recertification Training - 2 days**

*Who Attends:* NWS personnel required to climb elevated structures as a function of their duties and who were initially trained in fall protection and simple rescue techniques for towers below 100 feet.

*Objective:* This 2-day course includes extensive hands-on training. Students will review and improve their knowledge of fall protection, climbing and rescue skills acquired during the initial fall protection training. The course curriculum also includes a comprehensive equipment inspection under supervision of instructors. Practical

exercises are performed on the Rohn towers installed at NWSTC. Students are required to bring all climbing equipment issued to them during the initial fall protection course so equipment can be inspected and approved for further use. Participants are expected to wear sturdy shoes during practical exercises. Coveralls, safety shoes, and gloves are recommended.

---

#### **WSR-88D Maintenance - 33 days**

*Who Attends:* Electronics Technicians with WSR-88D maintenance responsibility.  
Pre-requisites.

*Objective:* To provide attendee with knowledge, skills and abilities needed to initialize, configure, correctly shut down, monitor, test, troubleshoot, perform data backup data and otherwise maintain applicable hardware and software associated with the WSR-88D system.

---

#### **WSR-88D Open Remote Data Acquisition (ORDA) Maintenance Training – 6 days**

*Who Attends:* Electronics Technicians with WSR-88D maintenance responsibility.  
Pre-requisites.

*Objective:* To provide NWS, FAA, and Air Force Electronics Technicians with the knowledge and skills necessary to calibrate, perform preventive maintenance, and perform corrective maintenance on the ORDA system. Corrective maintenance will be taught to the Field Replacement Unit (FRU) level consistent with the ORDA maintenance philosophy (TBD). Students will leave the course with an understanding of the overall concept of the ORDA system including the All interfaces with the Legacy Equipment.

---

#### **WSR-88D MLOS Maintenance - 3 days**

*Who Attends:* Electronics Technicians at MLOS sites.

*Objective:* To provide the skills and knowledge required to perform installation, operation and maintenance of the equipment so as to achieve a minimum of downtime. Covers proper procedures to eliminate equipment damage resulting from incorrect handling as well as how to relate the comprehensive documentation in the instruction manual to actual equipment operation and maintenance. Provides understanding of the test equipment appropriate to your system and how Farinon equipment operation relates to the entire telecommunication system. Finally, covers troubleshooting at a module level and performance monitoring techniques to maintain an initial level of system operation.

### **CRS Maintenance - 6 days**

*Who Attends:* ETs/ESAs with CRS maintenance responsibility, two per site. Pre-requisites.

*Objective:* To provide ETs and ESAs with the skills and knowledge necessary to maintain and support the field NWS CRS systems.

---

### **AWIPS Systems Manager - 12 days**

*Who Attends:* ESA only. Pre-requisites.

*Objective:* To provide the site ESA (or RFC equiv.) with a deeper understanding of AWIPS hardware, communications, software components and dataflow than what was taught in prior AWIPS C.U.T. training. The emphasis will be on learning monitoring and problem-solving techniques in order to insure a secure and stable operating environment. Many troubleshooting exercises will be included. There will also be time for roundtable discussion between students to provide an opportunity to share useful AWIPS information derived at the field sites.

---

### **AWIPS Operations Support - 8 days**

*Who Attends:* SOOs, DOHs, AWIPS Focal Points. Pre-requisites.

*Objective:* To ensure all sites have a trained focal point available outside core work hours to provide operational support to AWIPS and ensure its proper use. Course is similar to AWIPS System Managers course for ESAs in this regard but customized to mets and hydros.

---

### **AWIPS Local Applications - 3.5 days**

*Who Attends:* For individuals who perform AWIPS local applications development. Introductory UNIX training a pre-requisite.

*Objective:* To provide developers the information and tools necessary to design, build, and test local applications on AWIPS. Focus will be on AWIPS-specific data access, programming tools (Perl and Tcl/Tk) and information to enable development and porting of local applications to AWIPS.

---

### **LINUX for WFOs/RFCs - 8 days**

*Who Attends:* ESAs, ETs, ITOs. Pre-requisites.

*Objective:* This course is designed to support a large variety of field (WFO/RFC) activities which utilize the Linux operating system. The course is aimed at ESAs, ETs, and ITOs who are active in installing and administering Linux systems as part of their site's operations. The focus of the course is on managing the Linux system and the services it renders. There is no single field platform targeted, rather the knowledge and skills acquired are applicable to any number of Linux platforms

employed at the site. The version of Linux taught at present is Red Hat version 9, as this is representative of many systems in use in the field.

---

### **Executive Leadership Seminar (ELS) - 8.5 days**

*Who Attends:* MICs and HICs, Regional and NCEP Division Chiefs, NWSH Branch and Division Chiefs. SOOs, DOHs, WCMs, ESAs and NCEP/Regional/NWSH Program Managers may attend if unfilled slots. Pre-requisites.

*Objective:* To provide NWS managers with skills needed to develop a diverse workforce into a cohesive team, and to develop their ability to be more empathetic and effective. The course utilizes case studies, work groups/workshops, and informal assessments, along with attendees' personal experiences, to focus on their values, attitudes, and management behaviors rather than on task-specific behavior.

---

### **Management and Supervision - 9.5 days**

*Who Attends:* New MICs, HICs, ESAs, DAPMs, Regional and NCEP Division Chiefs, and NWSH Branch and Division Chiefs who haven't completed the 80-hour NOAA requirement for management training. Also open to potential supervisors on an "as available" basis.

*Objective:* To provide the knowledge and skills needed by a new supervisor to effectively oversee the administration and operations of his/her WFO/RFC. Topics include: The NWS budget process; distinction between and diversity and their importance to WFO/RFC management; methods for assigning work, managing office routine, and using training to enhance office operations; managing personnel and performance issues; elements of effective communication; managing conflict with the WFO/RFC environment; responsibilities of office management with regard to local labor relations; and techniques for effective customer relations and dealing with the media and general public. New supervisors require this training within the first year of becoming a new supervisor.

---

### **Field Operations Management – 4.5 days**

*Who Attends:* SOOs, WCMs, Lead Forecasters, NCEP Lead Forecasters, **and others who are in charge when MIC/HIC is not in the office.** Pre-requisites.

*Objective:* To provide the knowledge and skills needed to manage WFO/RFC shift operations from a human resource and administrative perspective. Topics: responsibilities of office shift supervisors; utilizing a diverse workforce; working within the labor-management agreement; routine administrative tasks encountered during operational shifts; solving operational shift problems; performance and discipline issues; managing conflict within the operational environment; dealing with substance abuse; and basic leadership concepts.

### **Cooperative Network Operations - 8 days**

*Who Attends:* NWS personnel assigned to maintain the WFO Cooperative Observing Program. Pre-requisites.

*Objective:* To provide the knowledge and skills needed to maintain and manage the Cooperative Observing Program and its associated equipment. Topics include: Cooperative network requirements, purposes, and objectives; recruiting and training observers; installing and maintaining cooperative network equipment; CPM program duties; the role of NCDC and other agencies in the coop program; performing quality control on coop network data and managing program operations.

---

### **CRS Network Operations - 3 days**

*Who Attends:* CRS Operations Focal Point. Pre-requisite - a working knowledge of basic UNIX commands.

*Objective:* To provide the knowledge and skills that a CRS focal point needs to set up and manage the WFO CRS operations. Topics include: CRS operational concepts and terminology; CRS user interfaces and product configuration; Emergency override and backup live operations; set up and/or modification of the ASCII database text files and dictionary files; backup and/or restoration of the CRS database and CRS dictionary files; master processor switch procedure; front-end processor (FEP) switch procedure; set up and configuration of the CAFÉ formatter on AWIPS.

---

**WFO**

### **Hydrology Program Management - 8 days**

*Who Attends:* WFO Service Hydrologists and Hydrologic Focal Points. Pre-requisites.

*Objective:* To provide Service Hydrologists and Hydrology Focal Points with the basic knowledge and skills to manage the WFO hydrology program. This course covers a spectrum of topics dealing with the management of a WFO hydrology program. Lessons address policy guidance, local training, the duties of a Service Hydrologist and a Hydrology Focal Point, data collection, quality control, hydrologic networks, establishing forecast points, local development efforts, interacting with the RFC and other groups, post flood activities, media relations, and verification procedures.

### **WHFS Workshop - 3.5 days**

*Who Attends:* Service Hydrologists, Hydrologic Focal Points and one other WFO attendee.

*Objective:* To develop a basic proficiency in the use of the AWIPS WHFS application. This course focuses on the developing a basic proficiency in the use of the AWIPS WHFS application. It covers in detail the HydroBase, HydroView, and RiverPro segments of WHFS with an emphasis on hands-on use of these applications. The concept of train-the-trainer is discussed and suggestions made about how to conduct on-station training. This workshop is designed as a train-the-trainer workshop. The two individuals who attend this workshop are expected to return to their office and teach their staff how to use WHFS.

---

### **Environmental Compliance Training (Attrition) - 3 days**

*Who Attends:* Newly assigned Field Office environmental/safety or environmental focal points who are or will be involved in the day-to-day implementation of the NWS environmental compliance program.

*Objective:* The course will discuss environmental regulatory requirements and their application to National Weather Service (NWS) facilities. It is based on a content of the NWS Environmental Management manual (NWSM 50-5116). The environmental manual is published on the NWS safety and environmental website: ([http://www.ops1.nws.noaa.gov/SAFETY/Env\\_manual.htm](http://www.ops1.nws.noaa.gov/SAFETY/Env_manual.htm))

---

### **Data Acquisition Operations – 3.5 days**

*Who Attends:* Individuals at NWS Weather Forecast Offices (WFOs) who are involved with the data acquisition program. This includes individuals who help establish and/or inspect aviation observation stations, perform quality control of data, and/or are involved with the upper air program. Individuals can be a meteorologist, or hydro-meteorologist technician.

*Objective:* To address a long term need, this course is designed to provide the knowledge and skills needed to manage and operate the data acquisition program and its associated equipment. Management and operation of the cooperative program is excluded since it is covered in a separate course. Topics include: NWS policy and procedures; barometry; station inspections; quality control of observations; dissemination and receipt of data; collection and quality control of mesonet data; roles of other agencies and supplementary observations. In addition, training on interacting with people from diverse backgrounds will be included.

### **Crown Transmitter Maintenance - 3 days**

*Who Attends:* ESAs, ETs. Pre-requisites.

*Objective:* To provide the electronic technician with the skills required to maintain the Crown NOAA Weather Radio transmitter at established NWS standards.

---

### **Advanced Hydrologic Applications - 3.5 days**

*Who Attends:* WFO Service Hydrologists/Hydro Focal Points and RFC forecasters who have attended initial WHFS workshop.

*Objective:* To focus on the implementation of the site-specific forecast functionality and the multi-sensor precipitation estimation (MPE) function within the AWIPS WHFS software. These two functions take the WHFS from a simple hydrologic data analysis and monitoring package to a coupled, hydrometeorological forecasting and prediction tool, resulting in the need for enhanced coordination between the WFO hydrology program and the supporting RFCs. The course will discuss the basic requirements for the site-specific function, including the development of unit hydrographs and production of headwater guidance; execution of the model; and creation of forecast hydrographs. The MPE function, which has been implemented at the RFCs, will now be part of the WHFS. Discussion will include how the precipitation estimates are generated; use of the MPE estimates in hydrometeorological analysis; and use of the MPE estimates as input into site-specific.

---

### **Safety Training (attrition) - 3.5 days**

*Who Attends:* Field Office safety or environmental/safety focal points who are or will be involved in the day-to-day implementation of the NWS Occupational Safety and Health Program.

*Objective:* This safety course will provide guidance to field personnel on how to implement 32 NWS Safety Procedures included in the NWS Occupational Safety and Health manual (NWSM 50-5115). The manual is posted and can be downloaded from the NWS safety and environmental website: ([http://www.ops1.NWS.noaa.gov/SAFETY/Safety\\_manual.htm](http://www.ops1.NWS.noaa.gov/SAFETY/Safety_manual.htm)). The purpose of this course is not to provide specific instructions on each procedure contained in the safety manual, but rather to provide guidance on how to implement the NWS Safety Program at NWS facilities.

### **SRS Transmitter Maintenance - 3 days**

*Who Attends:* ESAs, ETs.

*Objective:* To provide the electronic technician with the skills required to maintain the SRS NOAA Weather Radio transmitter at established NWS standards.

---

**Armstrong Transmitter Maintenance - 3 days**

*Who Attends:* ESAs, ETs.

*Objective:* To provide the electronic technician with the skills required to maintain the Armstrong Weather Radio transmitter at established NWS Standards.

---

**Radiosonde Replacement System (RRS) Maintenance - 6 days**

*Who Attends:* ESAs, ETs.

*Objective:* To provide site personnel (ESA, ET) with sufficient familiarization with the system to perform operation, maintenance and repair. Maintenance training shall use a "hands-on" approach to instructions. Graduates of the maintenance course shall be able to: assemble and disassemble the RRS system and lowest repairable units in accordance with the manufacturer's instructions and documentation; perform troubleshooting to identify and isolate malfunctions in wiring, printed circuit boards, assemblies, and subassemblies; analyze available programming techniques to perform system/subsystem interface checks; and perform corrective and preventative maintenance of equipment.

---

**WCM course – 8.5 days**

*Who Attends:* New WCMs.

*Objective:* This course covers topics such as dealing with the media, time management, storm damage assessment, post disaster surveys, spotter networks, presentation skills, community relations, and operational warning philosophy.



## **COMET Courses**

### **Flash Flood Hydrology and QPE Workshop - 3 days**

*Who Attends:* All WFO forecast staff.

*Objectives:* Course will cover in detail flash flood guidance and the hydrometeorology of flash flooding. The course will discuss the strengths and limitations of flash flood guidance; events which can lead to the onset of flash flooding; the use of the Flash Flood Monitoring and Prediction (FFMP) application as a decision-making tool during heavy precipitation events; and use case studies as a training tool.

---

### **Climate Variability Workshop - 4 days**

*Who Attends:* SOOs / Climate Focal Points (Train-the-Trainer).

*Objective:* To provide background on all NWS climate products to answer questions from the public on how climate fluctuations affect local weather variability, as well as on the latest developments in the climate analysis and forecasting.

---

### **Boundary Layer Meteorology COMAP Symposium - 4.5 days**

*Who Attends:* SOOs

*Objective:* Forecasters need background training in micrometeorology and boundary layer processes in order to fully exploit IFPS capabilities to produce value-added forecast products for a variety of users and decision makers in the public and private sector. The symposium will address relevant micrometeorology and boundary layer topics such as soil type, soil moisture, vegetation, lakes, complex terrain, etc. Scientific background on IFPS algorithms and tools will also be provided.

---

### **Canada Winter Weather Workshop - 10.5 days**

*Who Attends:* Selected Winter Weather Focal Points (4 to 6 NWS students total)

*Objective:* The course focuses on hazardous winter season meteorology, from the synoptic scale to the mesoscale. The ultimate goal of the course is for participants to increase their understanding of winter weather phenomena and then to transfer this knowledge to their local offices.

---

### **Advanced Hydrologic Science Workshop – 8 days**

*Who Attends:* RFC DOHs, RFC senior hydrologists, and WFO service hydrologists.

*Objective:* As the hydrologic science leaders of their respective offices, the Development and Operational Hydrologists (DOH) at the RFCs and Senior Service Hydrologists (SH) at the WFOs, as well as senior RFC hydrologists, require training and information on these new scientific advancements. The RFC Operations Team

report, "Toward Improving the NWS Hydrologic Services Program Today and in the Future" identifies the need for increased science training for WFOs and RFCs.

---

**Climate Focal Point Operations Skills – 3 days**

*Who Attends:* Office Climate Focal Points.

*Objective:* The workshop will focus on resources and products of the U.S. Climate Services infrastructure, development of skills in stewardship practices of the Climate Observing System, and training on developing and delivering localized climate products.

---

**Dispersion Forecasting Training – 3.5 days**

*Who Attends:* SOOs / Office Focal Points.

*Objective:* In support of national Homeland Security and to support the requirement for all NWS field offices to perform an annual office exercise simulating response to the release of hazardous gases or materials in the atmosphere, COMET will offer a new "Dispersion Forecasting Training" Course for SOOs and Office Focal Points late in FY 2005. The emphasis of the course will be on how to interpret model predictions, and on the value that local expertise can add to any dispersion prediction. Two major simulations of actual events will be used. This course will augment a web-based training program for dispersion and response to toxic releases into the atmosphere which will be completed in early FY 2005.

---

**WARNING DECISION TRAINING BRANCH (WDTB)**

**WSR-88D Distance Learning Operations Course Workshop (DLOC) - 3.5 days**

*Who Attends:* All new mets and hydros. DL plus 3.5 day in-residence workshop. Prerequisites.

*Objective:* To provide initial, comprehensive training on the use and interpretation of products from the WSR-88D to facilitate the use of the radar in the production of operational forecasts and warnings. This 3.5 day workshop is supplemented with distance learning materials to be completed on-station and a series of teletraining sessions to comprise the entire DLOC course.

**Advanced Warning Operations Course Facilitator Workshop - 2 days**

*Who Attends:* DOHs.

*Objective:* To provide DOHs with presentations by both instructors and subject matter experts on course purpose, content, and administration of AWOC.

**TABLE 3 - FY 2005 NWS Training and Education Expenditures  
(9/1/04)**

**Note: Dollar Amounts in K  
NON-DISCRETIONARY BASE FUNDING**

COMET/UCAR Staff-Grant (non-FTE)	2000
NWSTC Admin.	320
COMET Van for students	30
COMET NWS SME Travel	30
Learning Management System - Recurring cost	100
Training Division (OS6) Budget	150
Teletraining Comms	30
COMET Hydrology Team	160
<i>(Note: OHD funds \$200K in addition to NSTEP)</i>	
OS6 Innovation Fund	140
NWP - COMET Staff at NCEP	287
AMS Journals	60
<i>(Note: OS&amp;T funds \$60K in addition to NSTEP)</i>	
<b>TOTAL NON-DISCRETIONARY BUDGET</b>	<b>3307</b>

**ATTACHMENT 2: FY 2005 NWS TRAINING SUPPORT OF NWS GPRA GOALS AND  
NOAA PERFORMANCE MEASURES**

**Red = goal missed in FY 2003**

**NWS Warning GPRA Goals 1-5**

- (1) *Tornado Warning Lead Time*
  - (2) *Tornado Warning Accuracy*
  - (3) *Tornado Warning False Alarm Ratio*
  - (4) *Flash Flood Warning Accuracy*
  - (5) *Flash Flood Warning Lead time - goal missed*
- 
- Advanced Warning Operations Course (28 hours of advanced warning techniques)
    - o 1600 NWS Forecasters and Hydrologists
    - o Threat Analysis and Warning Methodologies
    - o Situation Awareness, Effective Communications, Coordination
    - o Two tracks – “Core” and “Severe Weather”. Development of “Winter Weather” Track
  - 4 WES Simulations with Simulation Guides (1 per CONUS region)
  - WSR-88D Warning Functionality Training Modules (2 modules)
  - AWIPS Warning Functionality Training Modules (2 modules)
  - Flash Flood/Hydrology & QPE Workshops (3.5 days/54 forecasters)
  - Advanced Hydrologic Science Course (8 days/16 students)
  - Development of Satellite HydroMeteorology (SHyMet) Course
  - Warning Coordination Meteorologist **ONE** 8 day residence course.
  - Advanced Hydro Applications **FIVE** 3.5 day residence courses.
  - WFO Hydrology Program Management **ONE** 8 day residence course.
  - WFO Hydrologic Forecast System Workshop **ONE** 3.5 day residence course.
  - Start work on modules related to the development of Forecaster Development Program (FDP)-type course.
  - Stage I, II, and III Precipitation Processing web-based module.
  - Topics in Meteorology : Skew T, Log P Diagram RTM-230

### **Warning GPRA Goals 6 and 7**

(6) *Winter Weather Warning Accuracy*

(7) *Winter Weather Warning Lead Time*

- New WSR-88D Warning Functionality training modules (2 modules)
  - New AWIPS Warning Functionality training modules (2 modules)
  - Winter Weather Advanced Warning Operations Course (development in FY05)
    - o 12 hours of instruction to 1600 NWS forecasters
    - o Threat Analysis and Warning Methodologies
  - Development of Satellite HydroMeteorology (SHyMet) Course
  - MSC Winter Weather Course (10 days/20 forecasters total/4 to 6 NWS)
  - Start work on modules related to the development of FDP-type course.
  - An Introduction to Winter precipitation Type Forecasting CBT CD-ROM
  - IFPS Focal Point Distance Learning Course (IFPS01) supports the configuration of IFPS to produce weather elements used in the creation of text, tabular and graphical products
- 

### ***Forecast GPRA Goal 8***

8) *Hurricane Track Forecasts (48 Hours)*

- Possible tropical weather Interactive Forecast Preparation System (IFPS) training. (Actual IFPS training topics TBD.)

### ***Forecast GPRA Goals 9 and 10***

9) *Aviation Forecast – Accuracy*

10) *Aviation Forecasts – False Alarm Ratio*

- Distance Learning Aviation Course II: (DLAC2): Forecasting Convection for Aviation Operations (5 modules)
- Weather Event Simulator (WES) case on ceiling and visibility
- Potential web-based module or teletraining may be required for AVNFPS application in AWIPS.
- Terminal Aerodrome Forecast web-based module WBT-002
- Introduction to TWEB Forecasting RTM-251
- Transcribed Weather Broadcasts (TWEB) web-based module WBT-006
- Aviation Operators Course FY05 delivery
- IFPS Focal Point Distance Learning Course (IFPS01) supports the configuration of IFPS to produce weather elements used in the creation of text, tabular and graphical products
- 

### ***Forecast GPRA Goal 11***

11) *US Seasonal Temperature – Skill*

- Climate Variability Workshop (4 days/27 climate focal points)
- Climate Focal Point Operations Workshop (3 days/54 focal points)
- Data Acquisition Operations **FOUR** 3.5 day resident courses.
- Cooperative Network Operations **TWO** 8 day residence courses.
- Elements of A Cooperative Weather Station web-based module.
- Start of work on modules related to the development of FDP-type course.

- Training on new Weather Research and Forecasting (WRF) Model

***Forecast GPRA Goal 12***

***12) Precipitation Forecast – Day 3 Accuracy***

- IFPS Training. Training topics in FY 2005 TBD.
- Training on new Weather Research and Forecasting (WRF) Model
- Flash Flood/Hydrology & QPE Workshops (3 days/54 students)
- Development of Satellite HydroMeteorology (SHyMet) Course
- Start of potential work on modules related to the development of FDP-type course.

***Forecast GPRA Goals 13 and 14***

***13) Marine Wind Speed – Accuracy***

***14) Marine Wave Height - Accuracy***

- Regional Marine Workshops (2 to 3 to be held in FY 2005)
- IFPS training (FY 2005 training topics TBD)
- Modules on Winds in the Marine Boundary Layer; Shallow Water Wave Processes; True Sea State Forecasting; Rip Currents; Wind and wave forecasting (2 teletraining sessions)
- Data Acquisition Operations Course FIVE 3.5 day residence course – includes QC of marine observations.
- Potential web-based module or teletraining may be required for update to the SAFESEAS application in AWIPS.
- Development of IFPS WES simulation cases pertaining to grid editing methodologies to predict weather elements contained in marine products.

## **HOW NWS TRAINING MEETS NOAA STRATEGIC GOALS**

- Numerical Weather Prediction training; Dispersion Forecasting Training meets the NOAA Mission Goal of serving society's needs for weather and water information, and the NOAA Cross-Cutting Priority of Homeland Security.
- Integrated Sensor Training - This training is linked to serve society's needs for weather and water information.
- NWS Management, Supervision, and Leadership training helps to meet NOAA's Cross-Cutting Priority of "Organizational excellence: leadership, human capital, facilities, information technology and administrative products and services."
- Hydrology; fire weather; marine related training meets the NOAA Mission Goal to "Serve society's needs for weather and water information,"
- Climate training meets two NOAA Mission Goals: "Understand climate variability and change to enhance society's ability to plan and respond", and to "Serve society's needs for weather and water information"
- Administrative Support Assistant (ASA) training meets NOAA's Cross-Cutting priority of "Organizational excellence".
- IFPS training meets the NOAA Mission Goal to "Serve society's needs for weather and water information". IFPS is particularly critical in this regard, as it is the primary means for formulating and communicating NWS forecasts and products to customers.